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EXAMINER

MILIA, MARK R

ART UNIT PAPER NUMBER

2622

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/826,123

Applicant(s)

LOPEZ ET AL

Examiner

Mark R. Milia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 2/14/05, and has been entered and made of record. Currently, claims 1-27 are pending.

Drawings

2. Applicant's amendments filed on 2/14/05 have overcome the objections to the Drawings cited in the previous Office Action. Therefore the objections have been withdrawn.

Response to Arguments

3. Applicant's arguments filed 2/14/05 have been fully considered but they are not persuasive.

In response to applicant's arguments regarding the rejection of claims 11-13, 15, and 20-27, more specifically claims 11, 24, and 25, wherein on pages 8-10, the applicant asserts that the reference does not describe at least one under/overprinting map defining a predetermined total percentage of under/overprinting pixels, the map enabling the printing of relatively more pixels in at least some rows corresponding to the

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defective printing elements and relatively fewer pixels in at least some other rows corresponding to other printing elements. The examiner respectfully disagrees with the applicant because the reference of Billet does describe such a feature. Billet discloses a system in which defective print nozzles are compensated for by functional print nozzles. Particularly, as described in column 9 lines 10-19 and 29-35, when functional nozzles are compensating for defective nozzles dots are printed in both the originally intended area for the print nozzle and the area in which the defective nozzle was to print. From this description it can be seen that more dots or pixels will be printed in rows containing defective print nozzles than by rows with only functional print nozzles because extra dots are printed during a second scan over the band to compensate for the defective print nozzles that did not completely produce a successful dot.

In response to applicant's arguments regarding the rejection of claims 1-4 and 7-10, specifically claim 1, wherein on pages 10-11, the applicant asserts that the reference does not describe printing individual pixels with at least one of the additional printheads such that a higher percentage of pixels in the rows corresponding to the defective elements are printed relative to the percentage of pixels printed in the rows corresponding to the functional elements. The examiner respectfully disagrees with the applicant because the reference of Neese does describe such a feature. Neese discloses a system that detects defective printer jets and compensates for the defective jets with functional jets to ensure proper print quality. Particularly, as described in column 10 lines 39-59 and column 11 lines 16-29, when a defective jet is detecting during the processing of a print job a functional jet is used to make another pass over

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the previously printed row to print pixels that may not have been sufficiently printed by the defective jet that made the previous pass. Therefore, in order to ensure that the print job is of the correct quality when a defective jet is detected in the middle of processing a print job, a higher percentage of pixels are printed in the row corresponding to the defective jet relative to the row that does not contain a defective jet. Examiner would also like to note that the printing of a higher percentage of pixels in one row relative to the percentage of pixels in another row can be arbitrary if the image that is printed does not contain the same number of pixels to be printed in each row to begin with.

Therefore, the rejection of claims 1-27, as cited in the Office Action dated 11/16/04, is maintained and repeated in this Office Action.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this Office Action can be found in a prior Office Action.

Claims 11-13, 15, and 20-27 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6010205 to Billet.

Regarding claim 11, Billet discloses a method for printing a predetermined region of an image swath organized in rows and columns of pixels in a color, comprising identifying defective printing elements in a first printhead (see column 4 lines 2-67, reference teaches detection of defective inkjet nozzles which is analogous to defective

printing elements located in a printhead), providing at least one under/overprinting map defining a predetermined total percentage of under/overprinted pixels, the map enabling the printing of relatively more pixels in at least some rows corresponding to the defective printing elements and relatively fewer pixels in at least some other rows corresponding to other printing elements (see column 6 lines 27-42, column 9 lines 10-19 and 29-35, column 10 line 63-column 11 line 21, and column 11 line 53-column 12 line 15), and printing the predetermined region with at least one additional printhead according to the corresponding one of the under/overprinting maps (see column 10 line 63-column 11 line 21).

Regarding claim 24, Billet discloses a swath printer, comprising means for identifying defective printing elements in a first printhead of the swath printer (see column 4 lines 2-67, reference teaches detection of defective inkjet nozzles which is analogous to defective printing elements located in a printhead), means for mapping at least one of the defective printing elements to at least one corresponding defectively-printed pixel row in a uniformly colored region of an image swath (see column 6 lines 27-42 and column 10 line 63-column 11 line 21), and means for under/overprinting with another printhead more pixel positions in at least one defectively-printed pixel row than in at least some other pixel rows so as to compensate for the defective printing element corresponding to the defectively-printed pixel row (see column 6 lines 27-42, column 10 line 63-column 11 line 21, and column 11 line 53-column 12 line 15).

Regarding claim 25, Billet discloses a swath printing system, comprising: a print mechanism responsive to control commands for printing drops of a colored ink and at

least one additional fluid from a plurality of printing elements onto specific pixel locations of pixel rows of a print medium to print an image (see column 2 line 32-column 3 line 27), at least one under/overprinting map for governing the printing of the drops of a corresponding at least one additional fluid, the map defining a relatively higher percentage of printable pixel locations in the pixel rows corresponding to defective ones of the printing elements and a relatively lower percentage of printable pixel locations in the pixel rows corresponding to functional ones of the printing elements (see column 11 line 53-column 12 line 39), and a print controller connected to the under/overprinting map and the print mechanism, the print controller adapted to receive image data for a region of uniform color and generate control commands for printing drops of the at least one additional fluid as governed by the under/overprinting map (see column 3 lines 48-50, column 11 line 53-column 12 line 15 and Fig. 1A).

Regarding claim 12, Billet discloses the method discussed in claim 11, and further discloses wherein the predetermined total percentage is the same regardless of the number of defective printing elements in the first printhead (see column 11 line 10-column 12 line 15, reference shows a table in which the percentage of pixels covered when nozzles are found to be defective depends on a plurality different variables, in some cases the percentage is the same regardless of the number of defective printing elements and in some cases the percentage is different).

Regarding claim 13, Billet discloses the method discussed in claim 11, and further discloses wherein the predetermined total percentage is proportional to the number of defective printing elements in the first printhead (see column 11 line 10-

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column 12 line 15, reference shows a table in which the percentage of pixels covered when nozzles are found to be defective depends on a plurality different variables, in some cases the percentage is the same regardless of the number of defective printing elements and in some cases the percentage is different).

Regarding claim 15, Billet discloses the method discussed in claim 11, and further discloses printing the predetermined region with the first printhead (see column 2 lines 55-58 and column 10 line 63-column 11 line 6, reference teaches that each printhead has a plurality of nozzles that print the desired color of ink and therefore if one nozzle is found to be defective another nozzle located in the same printhead can be used to print the pixel that was not printed by the defective nozzle on a subsequent pass).

Regarding claim 20, Billet discloses the method discussed in claim 11, and further discloses wherein the predefined total percentage of under/overprinted pixels is different for at least some of the overprinting maps (see column 11 line 53-column 12 line 15, reference shows a table describing different variables which lead to different print masks or maps to correct for defective printing elements).

Regarding claim 21, Billet discloses the method discussed in claim 11, and further discloses constructing the at least one under/overprinting map based on the defective printing elements (see column 10 line 63-column 11 line 21 and column 11 line 53-column 12 line 15, reference shows a table describing different variables which lead to different print masks or maps to correct for defective printing elements).

Regarding claim 22, Billet discloses the method discussed in claim 11, and further discloses for each of the at least one under/overprinting maps, selecting one of a predefined set of under/overprinting maps based on the defective printing elements (see column 11 lines 10-21).

Regarding claim 23, Billet discloses the method discussed in claim 11, and further discloses wherein the corresponding under/overprinting map has a width less than or equal to the number of columns in the swath and a height less than or equal to the number of rows in the swath, and wherein the printing further comprises replicating the under/overprinting map in the column direction and the row direction so as to encompass the total number of rows and columns in the swath (see column 3 lines 16-27 and column 6 lines 27-42).

Regarding claim 26, Billet discloses the method discussed in claim 25, and further discloses a printing element quality detector connected to the print mechanism and the print controller for identifying the defective ones of the printing elements and the functional ones of the printing elements (see column 4 lines 2-67).

Regarding claim 27, Billet discloses the method discussed in claim 25, and further discloses wherein the print controller further generates control commands for printing drops of the colored ink (see column 2 line 32-column 3 line 27).

Claim Rejections - 35 USC § 103

5. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5975677 to Marler et al. in view of over U.S. Patent No. 6302511 to Neese et al.

Regarding claim 1, Marler discloses a method for uniformly printing pixel rows of a predetermined region of an image swath in a color, comprising: providing a first printhead having a first ink matched to the color and at least one additional printhead having a fluid, each printhead having individual printing elements for controllably printing individual pixels in corresponding ones of the rows (see column 5 line 62-column 6 line 6, column 6 lines 22-26, column 11 lines 11-21 and Fig. 13) and detecting defective printing elements and functional printing elements in the first printhead (see column 8 lines 23-55).

Marler does not disclose expressly identifying the rows corresponding to the defective printing elements and the functional printing elements, and printing individual pixels with at least one of the additional printheads such that a higher percentage of pixels in the rows corresponding to the defective elements are printed relative to the percentage of pixels printed in the rows corresponding to the functional elements.

Neese discloses detected defective printing elements and functional printing elements in the printhead (see column 6 lines 37-41 and column 7 lines 17-22), identifying the rows corresponding to the defective printing elements and the functional printing elements (see column 5 lines 28-41 and column 6 line 37-column 7 line 10),

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and printing individual pixels with at least one of the additional printheads such that a higher percentage of pixels in the rows corresponding to the defective elements are printed relative to the percentage of pixels printed in the rows corresponding to the functional elements (see column 7 lines 17-60, column 10 lines 39-59, and column 11 lines 16-29).

Marler & Neese are combinable because they are from the same field of endeavor, inkjet printing systems with defective printing element compensation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the compensation printing method of Neese with the inkjet printing system of Marler.

The suggestion/motivation for doing so would have been to provide minimal degradation in print quality and speed when defective printing elements are detected (see column 6 lines 41-44 of Neese).

Therefore, it would have been obvious to combine Neese with Marler to obtain the invention as specified in claim 1.

Regarding claim 2, Marler and Neese disclose the method discussed in claim 1, and Marler further discloses wherein the fluid is a colored ink (see column 6 lines 22-26 and column 11 lines 11-21).

Regarding claim 3, Marler and Neese disclose the method discussed in claim 2, and Marler further discloses wherein each at least one additional printhead has a different colored ink (see column 6 lines 22-26 and column 11 lines 11-21).

Regarding claim 4, Marler and Neese disclose the method discussed in claim 2, and Marler further discloses wherein the first ink is black ink, and the colored ink is selected from the group consisting of cyan ink, magenta ink, and yellow ink (see column 6 lines 22-26 and column 11 lines 11-21).

Regarding claim 7, Marler and Neese disclose the method discussed in claim 1, and Marler further discloses printing at least some individual pixels with the first printhead (see column 11 lines 22-32).

Regarding claim 8, Marler and Neese disclose the method discussed in claim 7, and Marler further discloses wherein some individual pixels are printed with the at least one of the additional printheads before the some individual pixels are printed with the first printhead such that the fluid is placed on the image swath below the first ink (see column 11 lines 22-32, reference shows an example in which a yellow droplet and a cyan droplet are ejected onto the same location to produce a green dot, it is understood that the order in which the droplets are placed is irrelevant because the green dot will be produced regardless of the order, therefore reference teaches the claimed element for under/overprinting).

Regarding claim 9, Marler and Neese disclose the method discussed in claim 8, and Marler further discloses wherein some individual pixels are printed with a different at least one of the additional printheads after the some individual pixels are printed with the first printhead such that the fluid is placed on the image swath on top of the first ink (see column 11 lines 22-32, reference shows an example in which a yellow droplet and a cyan droplet are ejected onto the same location to produce a green dot, it is

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understood that the order in which the droplets are placed is irrelevant because the green dot will be produced regardless of the order, therefore reference teaches the claimed element for under/overprinting).

Regarding claim 10, Marler and Neese disclose the method discussed in claim 7, and Marler further discloses providing image data and processing the image data to form the image swath (see column 4 lines 38-67).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marler and Neese as applied to claim 1 above, and further in view of U.S. Patent No. 5933164 to Sato et al.

Marler and Neese do not disclose expressly (*claim 5*) wherein the fluid is a conditioning solution and (*claim 6*) wherein the conditioning solution has a substantially clear color.

Sato discloses (*claim 5*) wherein the fluid is a conditioning solution (see column 10 lines 45-60) and (*claim 6*) wherein the conditioning solution has a substantially clear color (see column 8 lines 1-8).

Marler, Neese & Sato are combinable because they are from the same field of endeavor, ink jet printing systems.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the conditioning colorless ink of Sato with the print system of Marler and Neese.

The suggestion/motivation for doing so would have been to provide color print jobs with resistance to bleeding, evenness of color, and decreased tendency to clog printing elements (see column 10 line 45-column 11 line 50 of Sato).

Therefore, it would have been obvious to combine Sato with Marler and Neese to obtain the invention as specified in claims 5 and 6.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Billet as applied to claim 11 above, and further in view of U.S. Patent No. 4963882 to Hickman.

Billet does not disclose expressly wherein the predetermined region represents at least a portion of at least one text character.

Hickman discloses wherein the predetermined region represents at least a portion of at least one text character (see column 8 lines 48-63).

Billet & Hickman are combinable because they are from the same field of endeavor, printing systems that compensate for defective printing elements.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the single color printing approach of Hickman with the print system of Billet.

The suggestion/motivation for doing so would have been to provide a more accurate way to print black or black/grey character images by using a two dot, two nozzle, system to ensure proper pixel coverage (see column 8 line 64-column 9 line 3 of Hickman).

Therefore, it would have been obvious to combine Hickman with Billet to obtain the invention as specified in claims 14.

Claims 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billet as applied to claim 15 above, and further in view of Sato.

Billet discloses (*claim 19*) wherein the color is black (see column 2 lines 36-38), the at least one additional printhead is a second printhead and a third printhead (see column 2 lines 38-42), the second printhead deposits drops of cyan ink (see column 2 lines 39-41), and the third printhead deposits drops of magenta ink (see column 2 lines 41-42).

Billet does not disclose expressly (*claim 16*) wherein the first printhead deposits drops of an ink having the color, and each additional printhead deposits drops of another fluid and (*claim 18*) wherein the fluid is a dye-based ink having a different color.

Sato discloses (*claim 16*) wherein the first printhead deposits drops of an ink having the color, and each additional printhead deposits drops of another fluid (see column 7 lines 35-40, column 8 lines 1-8, and Fig.9) and (*claim 18*) wherein the fluid is a dye-based ink having a different color (see column 8 lines 29-31 and column 9 lines 14-40).

Billet & Sato are combinable because they are from the same field of endeavor, ink jet printing systems.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the dye-based ink and colorless ink of Sato with the print system of Billet.

The suggestion/motivation for doing so would have been to provide color print jobs with resistance to bleeding, evenness of color, and decreased tendency to clog printing elements (see column 10 line 45-column 11 line 50 of Sato).

Therefore, it would have been obvious to combine Sato with Billet to obtain the invention as specified in claims 16, 18, and 19.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Billet and Sato as applied to claim 16 above, and further in view of U.S. Patent No. 6238047 to Suzuki et al.

Billet and Sato do not disclose expressly wherein the ink is a pigment-based ink.

Suzuki discloses wherein the ink is a pigment-based ink (see column 1 lines 29-39 and column 4 lines 37-58).

Billet, Sato & Suzuki are combinable because they are from the field of endeavor, ink jet printing systems.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the pigment ink of Suzuki with the print system of Billet and Sato.

The suggestion/motivation for doing so would have been to eliminate discoloration or color change and increase durability (see column 1 lines 29-34 of Suzuki).

Therefore, it would have been obvious to combine Suzuki with Billet and Sato to obtain the invention as specified in claim 17.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark R. Milia whose telephone number is (571) 272-7408. The examiner can normally be reached M-F 8:00am-4:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached at (571) 272-7402. The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mark R. Milia
Examiner
Art Unit 2622

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